

Applicants hereby amend the paragraph on page 11, beginning on line 9 of the specification as follows:

Based on the possible metal-removing capacities and tool lives, it has already been proposed that fine-boring be replaced by rough-honing. In this way, the advantages of the honing process can be more fully utilized. In order, however, to achieve quality corrections in terms of angularity and positional precision comparable to those when using fine-spindle-machining, it is not possible to transfer the normal degrees of freedom for a honing tool and workpiece to rough-honing.

Applicants hereby amend the paragraph on page 11, beginning on line 9 of the specification as follows:

An initially effected partial cut of an electromechanical feed of the honing stones may be implemented with defined pause intervals. The switch from partial cut to the full cut parameter can be triggered by monitoring the power input since the torque increases with the full-area application of the cutting tools. This can also be a signal to retire the slide movement such that as a result the reciprocating motion is initiated by the honing spindle, and the alternating longitudinal motion by the honing spindle is effected in the full cut. The use of the slide unit as the stroke-drive enables the stability of the spindle to be significantly increased.

Applicants hereby amend the paragraph on page 14, beginning on line 18 and continuing on page 17 of the specification as follows:

FIG. 1 shows a workpiece 1, which in this embodiment is an engine block. This workpiece has multiple bores 2 which are provided in the form of cylinder bores and have a circumferential surface 3 which is to be machined. Each bore 2 has a longitudinal axis M_B . Multiple crankshaft bearings 4 are provided in the lower section of the engine block 1, the bearings having a common axis K , i.e., the longitudinal axis of the crankshaft M_K . The engine block 1 is accommodated in a precise manner on the workpiece carrier 8 by indexing pins 9 so that the relative location of the workpiece 1 is precisely positioned.

Applicants hereby amend the paragraph on page 15, beginning on line 13 of the specification as follows:

As a result of the rough-honing operation, it is possible to implement an appropriate removal of material while simultaneously eliminating the offset S, thereby displacing the longitudinal axis of the bore M_B to the extent that this axis corresponds exactly to the position actually required in the engine block 1, thereby approaching the longitudinal axis M_A . The result is that at the same time a high angular precision is achieved for the longitudinal axis of M_B of the bore 2 relative to the longitudinal axis of crankshaft M_K .

Applicants hereby amend the paragraph on page 17, beginning on line 1 of the specification as follows:

FIG. 3 shows a radial section through the bore 2 and the honing tool 5 at the start of machining. It is evident here that the longitudinal axis M_B of the bore 2 has a displacement or an offset S relative to the longitudinal axis M_A of the working spindle, or of the honing tool 5. A feed rod 11 is centrally located within the honing tool 5, which rod acts through feed keys 12 on the honing stones 7. The feed keys 12 can be pressed outward by the feed rod 11, thereby also causing the honing stones 7 to effect a radially outward-directed motion.

Applicants hereby amend the paragraph on page 17, beginning on line 7 of the specification as follows:

As FIG. 3 shows, at the start of machining only a part of the honing tool 5 is applied to the circumferential surface 3 of the bore 2 such that in terms of the rough-honing operation initially only a partial cut is effected in which the honing tool 5 is not fully in contact. The removal of material only from a section of the circumferential surface 3 results in the bore center, and thus the longitudinal axis of the bore M_B , being displaced such that the longitudinal axis of the working spindle M_A and the longitudinal axis of the bore M_B approach each other. Only when the bore 2 is being machined everywhere with complete coverage, thus eliminating the offset S between the axes, is the bore 2 machined everywhere with complete coverage such that the honing stones 7 contact the entire circumference of the bore 2. As a result, the full cut is achieved by which the uniformly honed circumferential surface 3 is then generated.

Applicants hereby amend the paragraph on page 17, beginning on line 17 of the specification as follows:

FIG. 4 is a perspective view of a section of the bore wall, or of the circumferential surface 3 of the cylinder bore 2. Here a section 13 with a turning profile in the left region of the bore 2 can be seen, while a section 14 with a honing profile in the right region of the bore 2 is present. This illustration clearly reveals that in the initially effected partial cut only a certain section of the circumferential surface 3 is machined by rough-honing and that there is a transition from the turning profile to the honing profile.